

The outstanding Office Action rejected Claims 1-7 under the second paragraph of 35 U.S.C. § 112 as being indefinite relative to the recitals of a "dense defect-injected region" and "being made of material being more fragile than the hetero-configuration". In addition, Claims 1 and 3 were rejected under 35 U.S.C. § 102(b), as far as they were understood, as being anticipated by Scifres et al. (U.S. Patent No. 4,984,242, hereinafter Scifres), while Claim 2 was rejected, as far as it was understood, under 35 U.S.C. § 103(a) as being obvious over Scifres in view of Inoue et al. (U.S. Patent No. 5,019,874, hereinafter Inoue), Claims 4-6 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Scifres in view of Sugawara et al. (U.S. Patent No. 5,153,889, hereinafter Sugawara), and Claim 7 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Scifres in view of Sugawara and further in view of Inoue.

In response to the rejection under the second paragraph of 35 U.S.C. § 112, it is noted that contrary to the assertion of page 2 of the Official Action, the questioned terminology is in fact defined in the specification. Thus, the original specification (see, for example, page 11, lines 25-32, which discuss Figure 5) makes it perfectly clear that a "dense defect-injected layer" is a layer like layer 30 which has a defect density of at least $10^4/\text{cm}^2$, a lattice constant which is at least

10⁻² and a thickness of 10mm or more. Note also that page 13, lines 14-18, discusses the "fragile, or soft" nature of the material of this dense defect-injected layer. These descriptions in the specification are relevant because it is well-established that "if the claims read in light of the specification reasonably apprise those skilled in the art of the scope of the invention, section 112 demands no more." Miles Laboratories, Inc. v. Chandon, Inc., 27 USPQ2d 1123, 1126 (Fed. Cir. 1993), cert. denied, 114 S.Ct. 943 (1994). Note also MPEP § 2173.02 and In re Moore, 169 USPQ 236, 238 (CCPA 1971).

However, in order to expedite prosecution, Applicant has amended Claims 1-7 to emphasize the nature of the material of the "dense defect layer" without any mention of defects being "injected" or the fragility of the material of the layer. Thus, Claims 1-7 now recite a "dense defect layer" of a material having a concentration of crystal defects, a value of a lattice constant, and a thickness so as to achieve the required blocking of at least some of the crystal defect migration or expansion into the layers of the hetero-configuration. Note that the courts have sanctioned defining something by what it does rather than by what it is. See In re Swinehart, 169 USPQ 226, 228 (CCPA 1971). In any event, newly added Claims 8-10 go even further in

setting forth the minimum values for crystal defects, lattice constants, and material layer thickness.

Accordingly, it is respectfully submitted that present Claims 1-7 and newly added Claims 8-10 are definite in terms of the second paragraph of 35 U.S.C. § 112. Consequently, the withdrawal of this ground of rejection as to these claims is respectfully requested.

Before discussing in detail the prior art rejections applied as to original Claims 1-7, it is believed that a brief review of the present invention is in order.

In the present invention, a dense defect layer of a material having a planned and preselected defect density, a planned and preselected value of a lattice constant and an associated minimum thickness is provided in at least one portion of a semiconductor light emitting device separate from a hetero-configuration of plural cladding layers surrounding an active light emitting layer. This dense defect layer safeguards the hetero-configuration layers from crystal defects migrating or extending to the hetero-configuration layers after, for instance, heat processing associated with the resin packaging of the semiconductor light emitting device induces such crystal defects in surface regions and other regions external to the hetero-configuration layers.

The preferred embodiment of the present invention incorporates a material having a defect density of least $10^4/\text{cm}^2$, a crystal lattice constant value of at least 10^{-2} , and an overall layer thickness of at least 10nm.

Attention is now directed to the rejection of original Claims 1 and 3 as being anticipated by Scifres. The top of page 3 of the Official Action notes that Scifres uses a strain layer to prevent defect migration to the active region. However, Scifres teaches the introduction of strain layers into the cladding layers as noted at, for instance, column 2, line 45 - column 3, line 5. In addition, while Scifres is concerned with lattice matching, nothing is set forth in terms of the density of crystal defects, crystal lattice constant, and thickness of the strain layer being important in terms of their combined effects on preventing crystal defect passage through this strain layer.

Thus, it is clear that the strain layer 27 of Scifres is formed in cladding layer 25 and not between the first electrode and the layers of the hetero-configuration as all of the present claims in this application require. Similarly, in Figure 3 of Scifres, upper and lower strain layers 47 and 49 bound active region 45 inside the cladding layers 51 and 53. Clearly, Scifres fails as an anticipatory reference because of such

teachings of the placement of the suggested strain layers and the lack of any suggestion which would have led the artisan to place a layer of the nature set forth by Claim 1 in the position specified by Claim 1. Accordingly, Claim 1 is believed to be allowable over what is fairly taught and suggested by Scifres.

Just as the teachings and fair suggestions of Scifres are believed to not render obvious or anticipate the subject matter of amended Claim 1, this reference is also not believed to either anticipate or render obvious the subject matter of dependent Claim 3. Moreover, dependent Claim 3 is believed to be patentable for the additional reason that it specifies further features of the present invention which are not disclosed or suggested by Scifres.

Turning to the § 103 rejections of Claims 2 and 4-7, it is noted that Scifres is once again relied upon for the basic teachings as to the dense defect layer of these claims. However, as noted above, Scifres fails to teach this claimed dense defect layer in terms of either its location or the material of its composition.

Moreover, there is nothing in the secondarily applied references to Inoue or Sugawara which corrects for these deficiencies in Scifres. Thus, even if it can be said that Inoue teaches the use of multiple defect regions to limit defect

migration and even if Scifres can be said to teach the use of a buffer layer to impede defect migration, these teachings and suggestions do not compensate for the lack of any teaching or suggestion in these references as to the first dense defect layer and its placement which is set forth by these claims. Similarly, the Sugawara teachings as to a current spreading layer and a buffer layer also cannot cure the above-noted deficiencies in Scifres. Accordingly, it is also believed that each of Claims 2 and 4-7 is clearly allowable.

With respect to new Claims 8-10, it is noted that none of the applied references considered alone or in any proper combination teach or fairly suggest the particular values of density, lattice constant or layer thickness that are claimed. Accordingly, it is believed that each of Claims 8-10 is clearly allowable.

In summary, it is respectfully submitted that none of the references that have been applied anticipate or obviate the subject matter fully disclosed and positively claimed in the present application, no matter whether these references are considered individually or in any proper combination. It is further respectfully submitted that present Claims 1-10 all fully comply with requirements of the second paragraph of 35 U.S.C. § 112.

In view of the foregoing comments, it is respectfully submitted that the inventions defined by each of Claims 1-10 are patentable and a favorable reconsideration of this application is therefore requested.

Respectfully submitted,

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